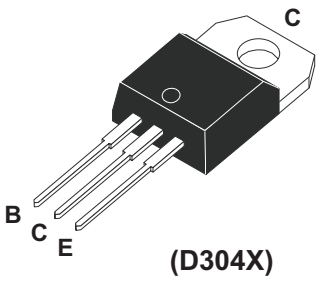
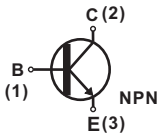
High Voltage Fast-Switchong NPN Power Transistor
12A/400V/100W



(D304X)



FEATURES

- High-speed switching
- High breakdown voltage
- High current capability
- High reliability

APPLICATIONS

- Electronic ballasts, energy-saving light
- High frequency power transformer
- High frequency switching power supply
- Common power amplifier

ABSOLUTE MAXIMUM RATINGS (T_C = 25°C)				
SYMBOL	PARAMETER		VALUE	UNIT
V_{CBO}	Collector to base voltage (I_E=0)		450	V
V_{CEO}	Collector to emitter voltage (I_B=0)		400	
V_{CES}	Collector to emitter voltage (V_{BE}=0)		450	
V_{EBO}	Emitter to base voltage		9	
I_C	Collector current		12	A
I_{CM}*	Peak Collector current		24	
I_B	Base current		6	
I_{BM}*	Peak Base current		12	
P_C	Collector power dissipation	T_C= 25°C	100	W
T_j	Junction temperature		150	°C
T_{stg}	Storage temperature		-55 to 150	

*Pulse test: pulse width = 5.0ms, duty cycle < 10%

THERMAL CHARACTERISTICS (T_C = 25°C)			
SYMBOL	PARAMETER	VALUE	UNIT
$R_{th(j-c)}$	Thermal resistance, junction to case	1.25	°C/W

ELECTRICAL CHARACTERISTICS (T_C = 25°C)					
SYMBOL	**PARAMETER**	**CONDITIONS**	**MIN**	**MAX**	**UNIT**
I_{CBO}	Collector cutoff current	V_{CBO} = 450V, I_E = 0		100	μA
I_{CEO}		V_{CEO} = 400V, I_B = 0		50	
I_{EBO}	Emitter cutoff current	V_{EBO} = 9V, I_C = 0		1.0	
$V_{(BR)CEO}$	Collector to emitter breakdown voltage	I_C = 10mA, I_B = 0	400		V
$V_{CEO(SUS)}$*	Collector to emitter sustaining voltage	I_C = 1A, L = 50mH			
$V_{(BR)CBO}$	Collector to base breakdown voltage	I_C = 1mA, I_E = 0	450		
$V_{(BR)EBO}$	Emitter to base breakdown voltage	I_E = 1mA, I_C = 0	9		
h_{FE}	Forward current transfer ratio (DC current gain)	V_{CE} = 5V, I_C = 5A	8	40	
		V_{CE} = 5V, I_C = 8A	5		
$V_{CE(sat)}$	Collector to emitter saturation voltage	I_C = 5A, I_B = 1A		0.8	V
		I_C = 8A, I_B = 1.6A		2.2	
$V_{BE(sat)}$	Base to emitter saturation voltage	I_C = 5A, I_B = 1A		1.6	
t_{on}	Turn-on time	V_{CC} = 24V, I_C = 5A I_{B1} = -I_{B2} = 1A		0.7	μS
t_{stg}	Storage time			3.0	
t_f	Fall time			0.7	
f_T	Trasistion frequency	V_{CE} = 10V, I_C = 0.5A f = 1.0MHz	2.5		MHz

*$V_{CEO(sus)}$ Test circuit

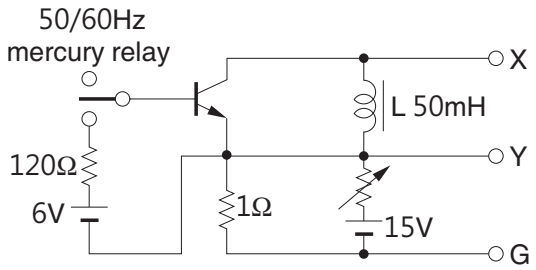


Fig.1 DC Current gain

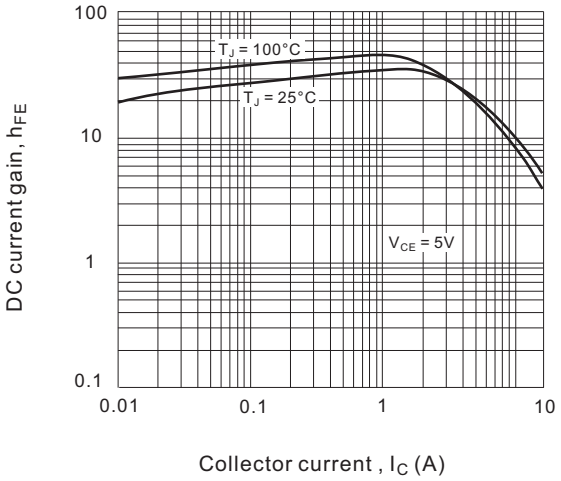


Fig.2 Base - Emitter saturation voltage

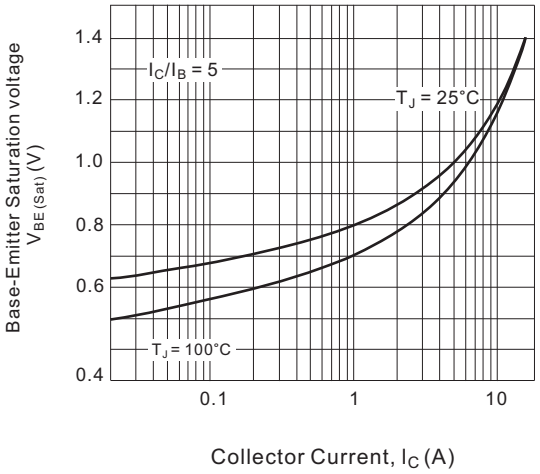


Fig.3 Collector-Emitter saturation voltage

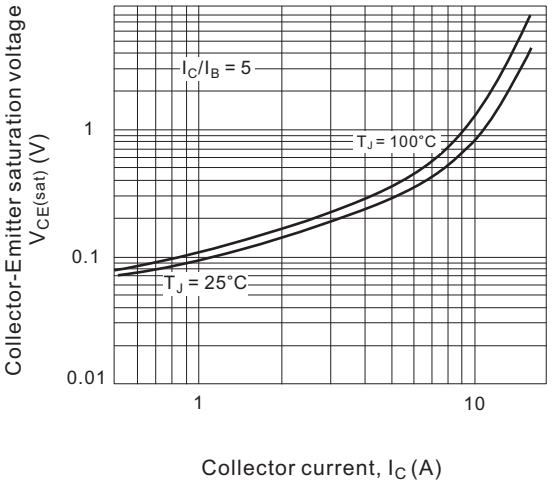
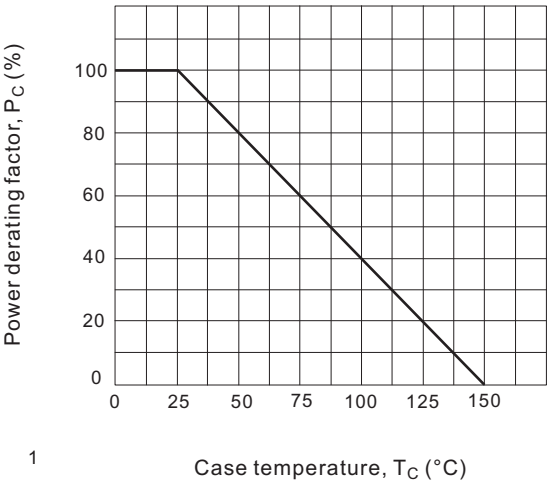
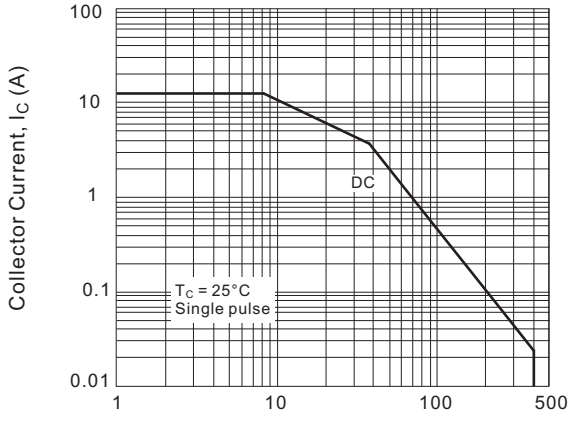


Fig.4 Power derating



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Fig.5 Safe operating area (SOA)



Case Style

TO-220AB

